How Portfolios Evolve After Retirement: The Effect of Health Shocks

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Motivation

- Today’s workers are reaching retirement with more assets than their predecessors.
- But health shocks still constitute a significant source of financial risk for the elderly.
- Understanding how assets evolve during retirement and how this is affected by health shocks will help us predict the economic well-being of the elderly.

Overview

- Goal: to study the portfolio allocation decisions of the elderly.
- Analysis:
  - Part 1: Document the patterns of asset holdings in 10 different asset classes as households age. Employ strategies to distinguish the true effect of aging from cohort effects or effects of differential mortality.
  - Part 2: Examine changes in asset holdings before and after health shocks. Use multiple definitions of health shock.

Contributions of Our Analysis

- Previous literature has shown:
  - The elderly are reluctant to sell their homes except in the case of a shock like death of a spouse (Venti & Wise, 1989, 2002).
  - There are differences in portfolio allocation over the lifecycle and by birth cohort (Poterba and Samwick, 2001).
  - Health is related to portfolio allocation in the cross-section (Rosen and Wu, 2004) and health shocks affect total asset holdings (Feinstein and Ho, 2001; Wu, 2003).
- Our work complements and builds on this literature by:
  - Looking specifically at how assets evolve during retirement, for many different asset classes.
  - Examining how health shocks affect holdings of many asset classes.

Preview of Findings

- The ownership rates of homes, vehicles, businesses, and real estate fall dramatically with age. The ownership rates of financial assets such as CDs and bonds have no strong, consistent relationship with age.

- Health shocks play an important role in explaining changes in household portfolios over time, though the timing and assets affected varies by type of health shock.

Data

- Health and Retirement Study (HRS)
  - The HRS began in 1992 as a survey of persons born 1931-1941 and their spouses, with re-interviews every 2 years.
  - In 1998, the HRS merged with the AHEAD study and added new cohorts to cover all people born before 1948. Combined sample size of nearly 14,500 households.
  - We use data from all 6 waves of the HRS (1992-2002). We use the RAND version of the HRS, including their wealth imputations.
- The HRS is well-suited for our analysis:
  - It has detailed information on assets and health among the elderly.
  - It follows the same households over time, so we can look at how portfolio allocation changes as retirees age and after a health shock.

Empirical Strategy, Part I

- Explore how asset holdings evolve with age for 10 asset categories: principal residence, other real estate, vehicles, businesses, IRAs, stocks, bonds, CDs, bank accounts, and other savings.

- We construct graphs showing how asset holdings of each cohort evolves as the cohort ages.
  - Each birth cohort is observed 3 to 6 times (e.g., people born in 1931-1932 are 60-61 in 1992, 62-63 in 1994, ... and 70-71 in 2002).

  - By graphing evolution of wealth by cohort for all cohorts on the same graph, can get a sense of how wealth evolves with age.

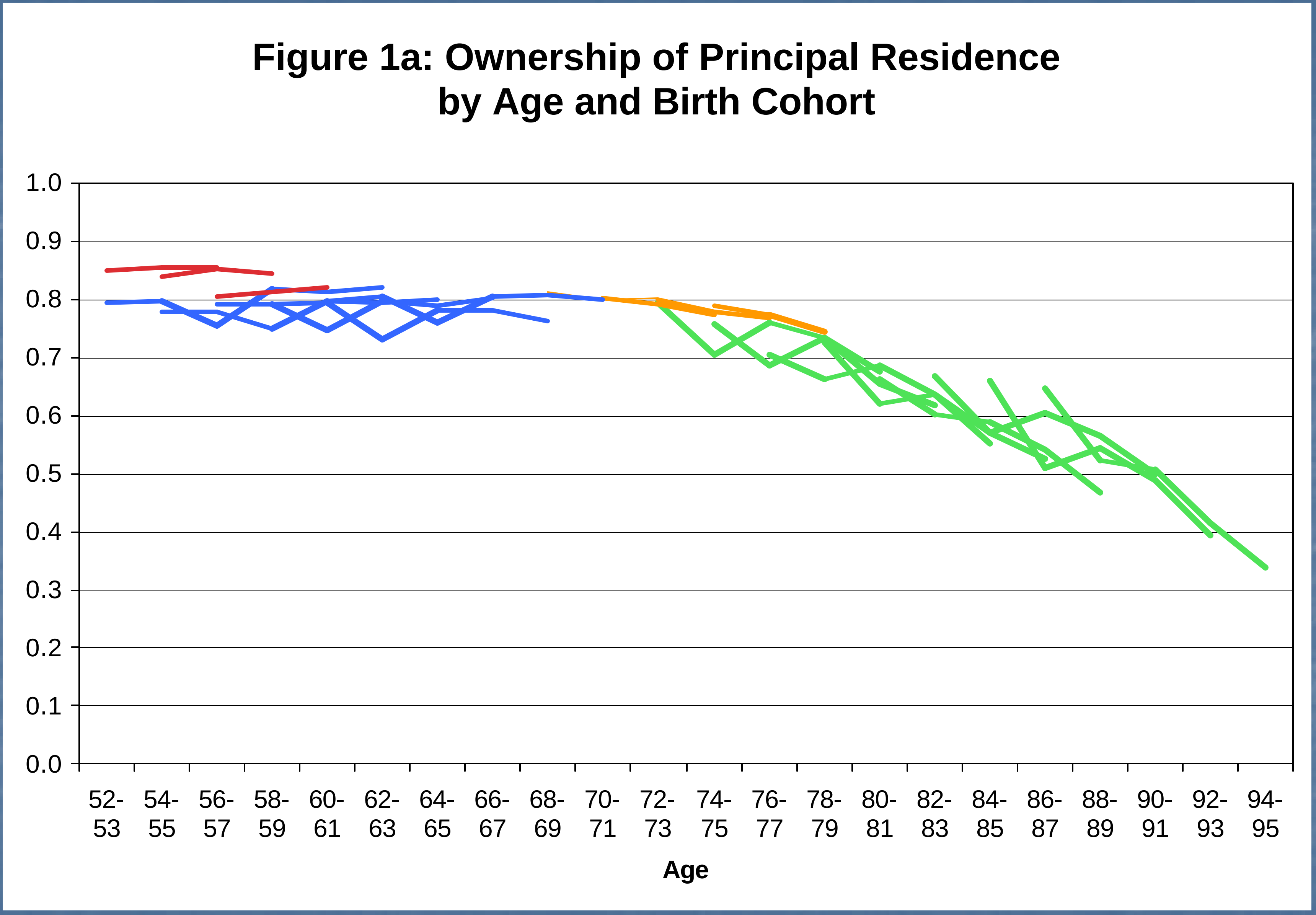
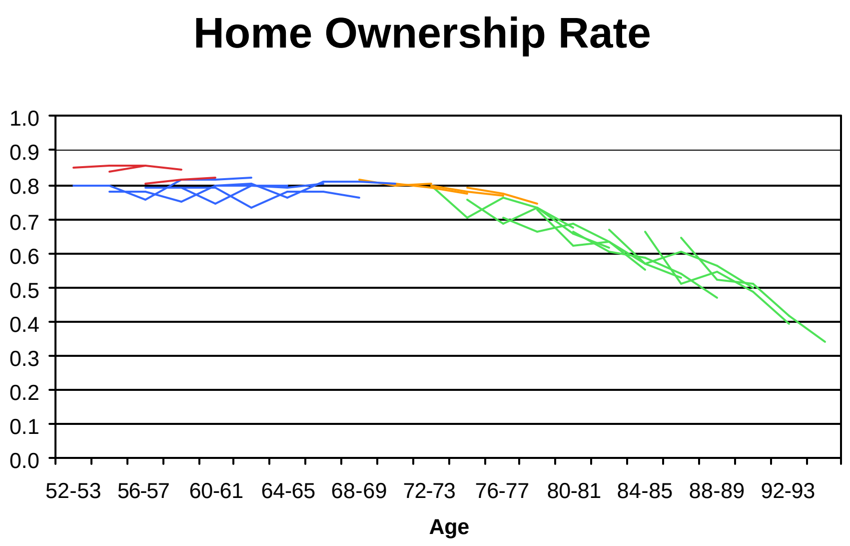
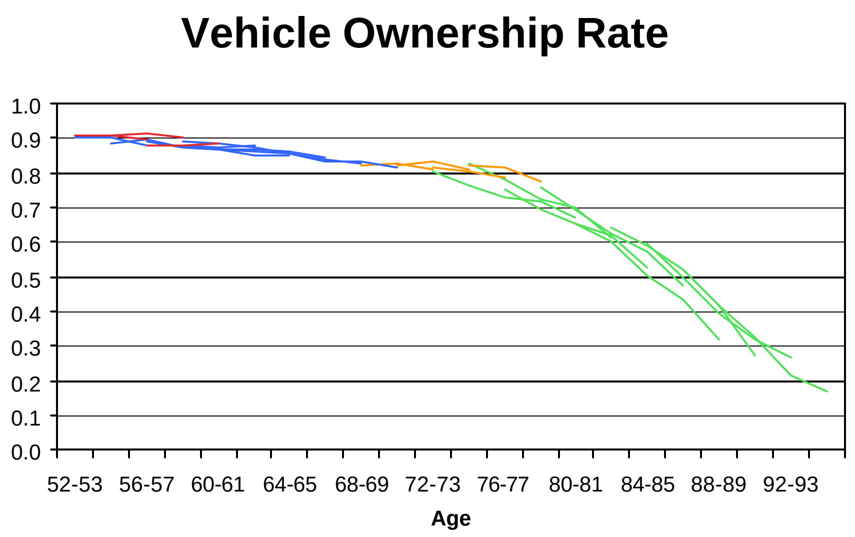
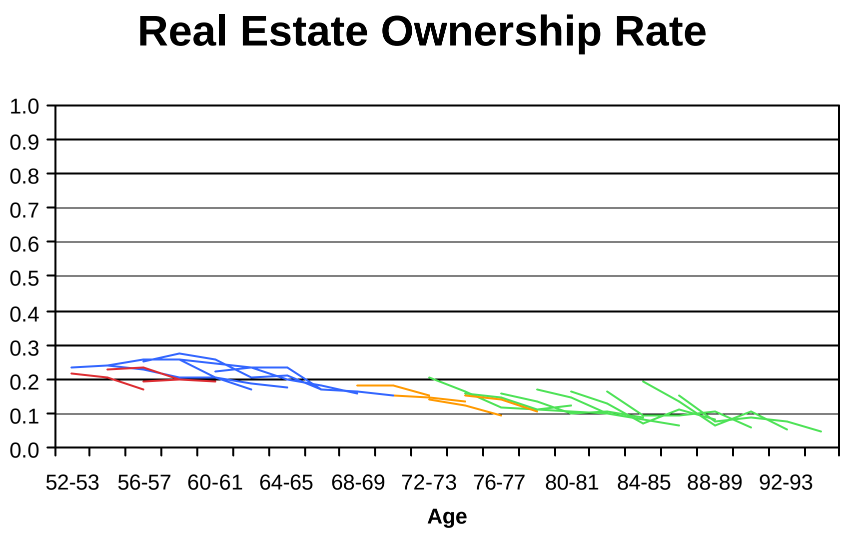
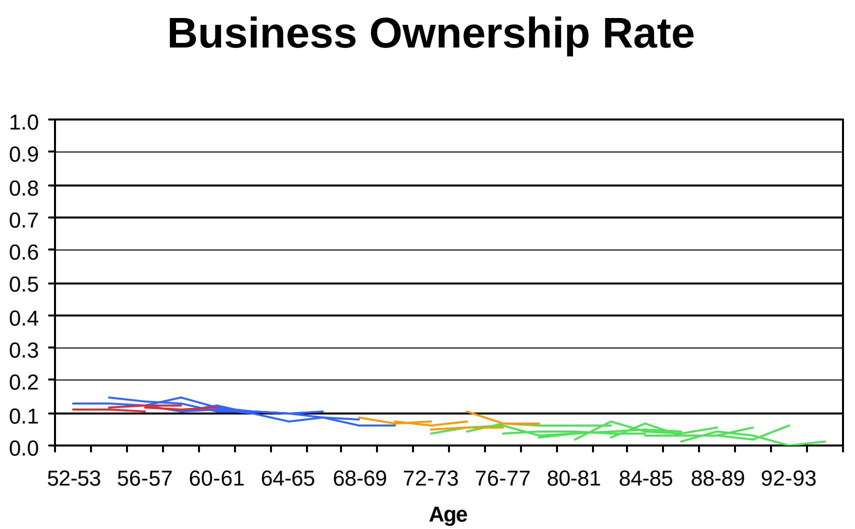


Figure 1a: Ownership of Principal Residence
by Age and Birth Cohort
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
52-53
54-55
56-57
58-59
60-61
62-63
64-65
66-67
68-69
70-71
72-73
74-75
76-77
78-79
80-81
82-83
84-85
86-87
88-89
90-91
92-93
94-95
Age

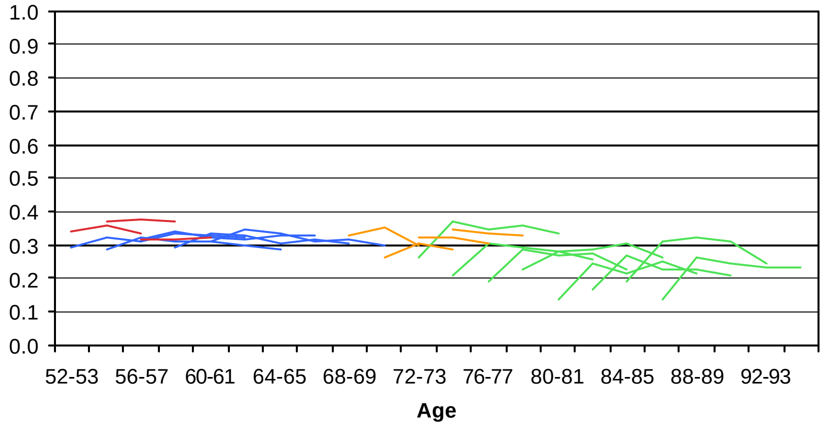

Home Ownership Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
52-53
56-57
60-61
64-65
68-69
72-73
76-77
80-81
84-85
88-89
92-93
Age


Vehicle Ownership Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
52-53
56-57
60-61
64-65
68-69
72-73
76-77
80-81
84-85
88-89
92-93
Age

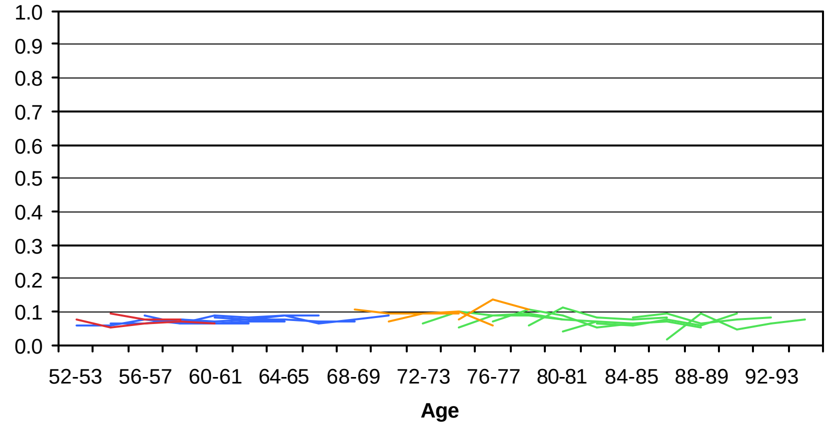

Real Estate Ownership Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
52-53
56-57
60-61
64-65
68-69
72-73
76-77
80-81
84-85
88-89
92-93
Age


Business Ownership Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
52-53
56-57
60-61
64-65
68-69
72-73
76-77
80-81
84-85
88-89
92-93
Age

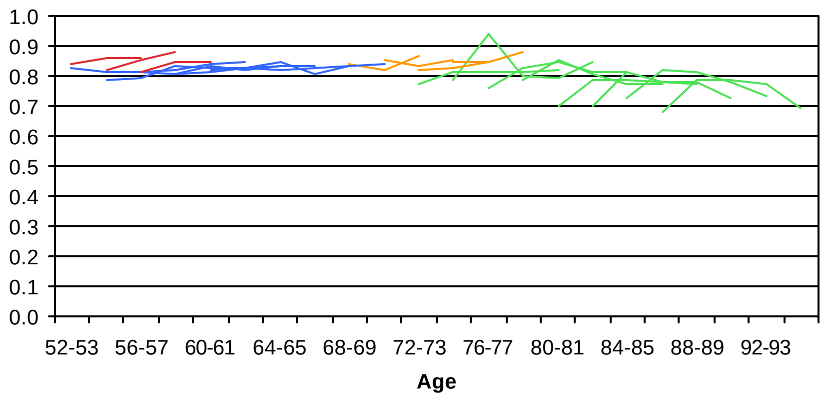
Stock Ownership Rate



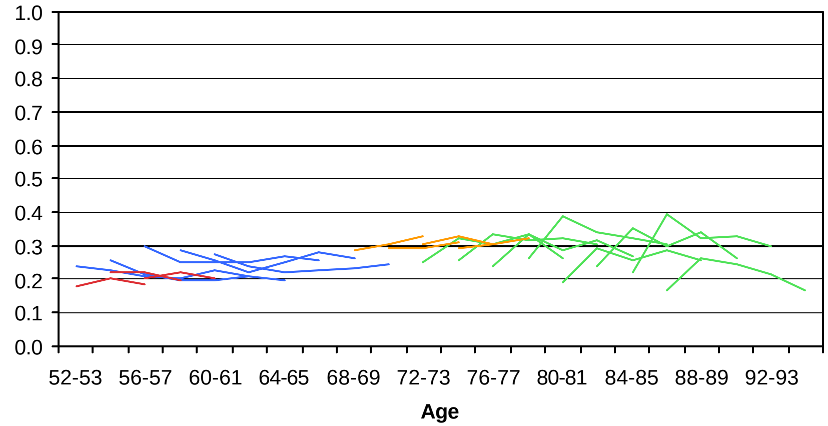
Bond Ownership Rate



Bank Account Ownership Rate



CD Ownership Rate



Regression Results, Part I

- Concern: cohort effects or differential mortality could confound relationship between age and asset holdings seen in graphs.
- Address this with regressions including cohort or family fixed effects:

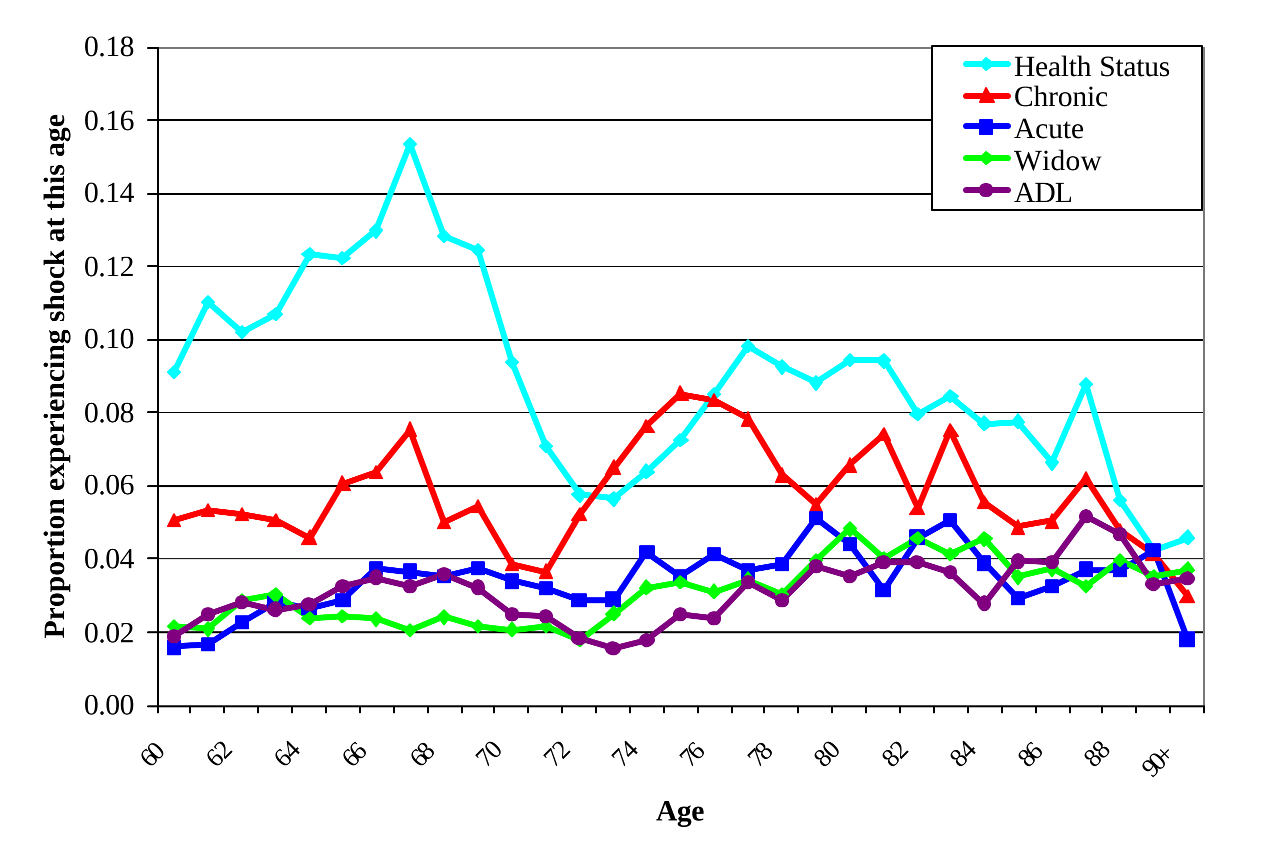
$$Assetholdings_{it} = b_0 + b_1 age_{it} + b_2 X_{it} + g_i + e_{it}$$

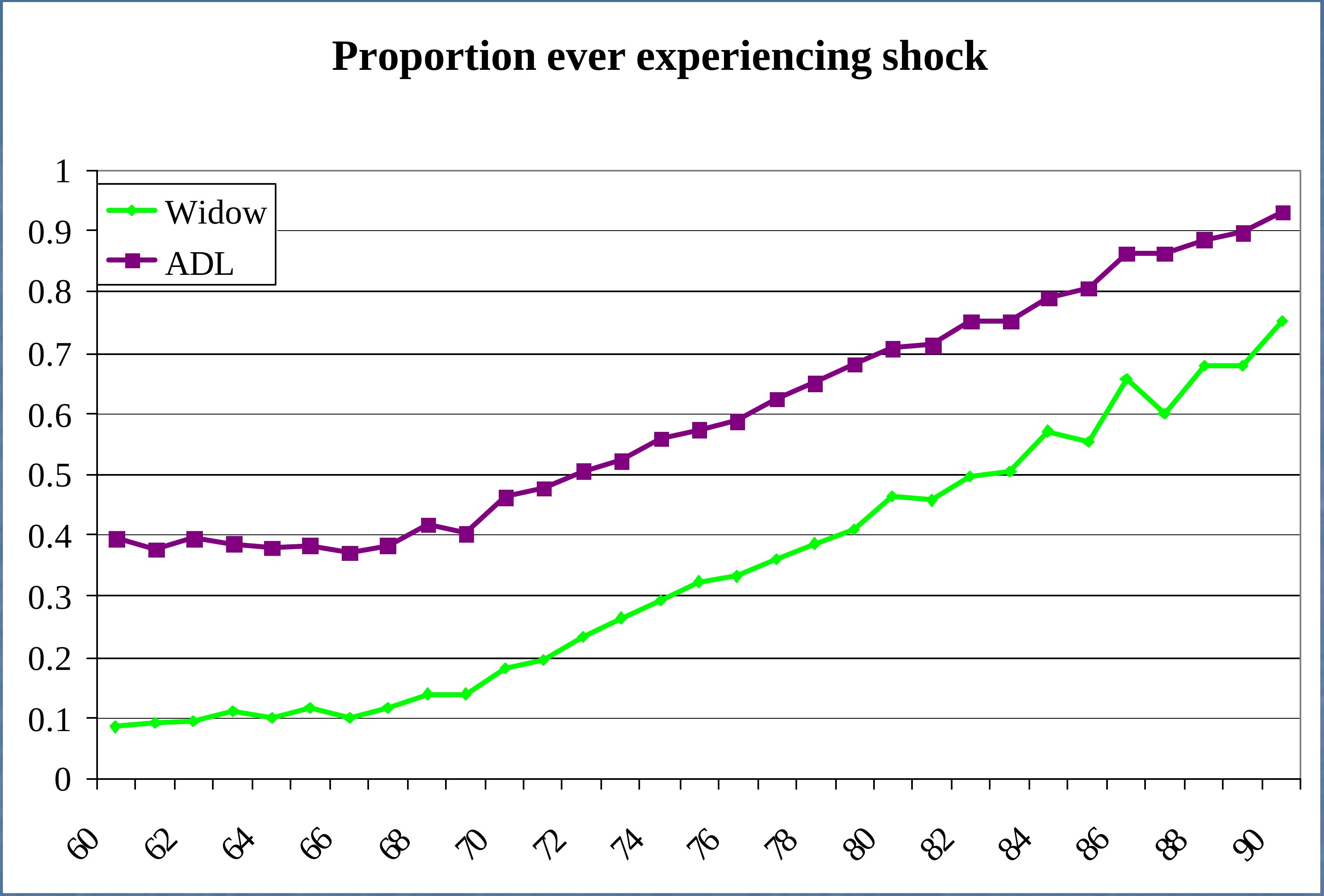
- Findings:
  - Effect of age on holdings unaffected by adding cohort dummies.
  - With family fixed effects, only find negative effect of age on home and vehicle ownership.

Are Changes in Asset Holdings Related to Health Shocks?

- We use several definitions of a health shock (all dummies):
  - Experiencing an “acute event” (heart problems, stroke, cancer)
  - Receiving a diagnosis of a new chronic illness
  - Reporting a worse health status than at the previous wave
  - Reporting more difficulty with ADLs than at the previous wave
  - Becoming widowed
- In all cases, the household is treated as experiencing a shock if either spouse receives a shock.

Frequency of Health Shocks




Proportion ever experiencing shock
Widow
ADL
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
60
62
64
66
68
70
72
74
76
78
80
82
84
86
88
90

Empirical Strategy, Part II

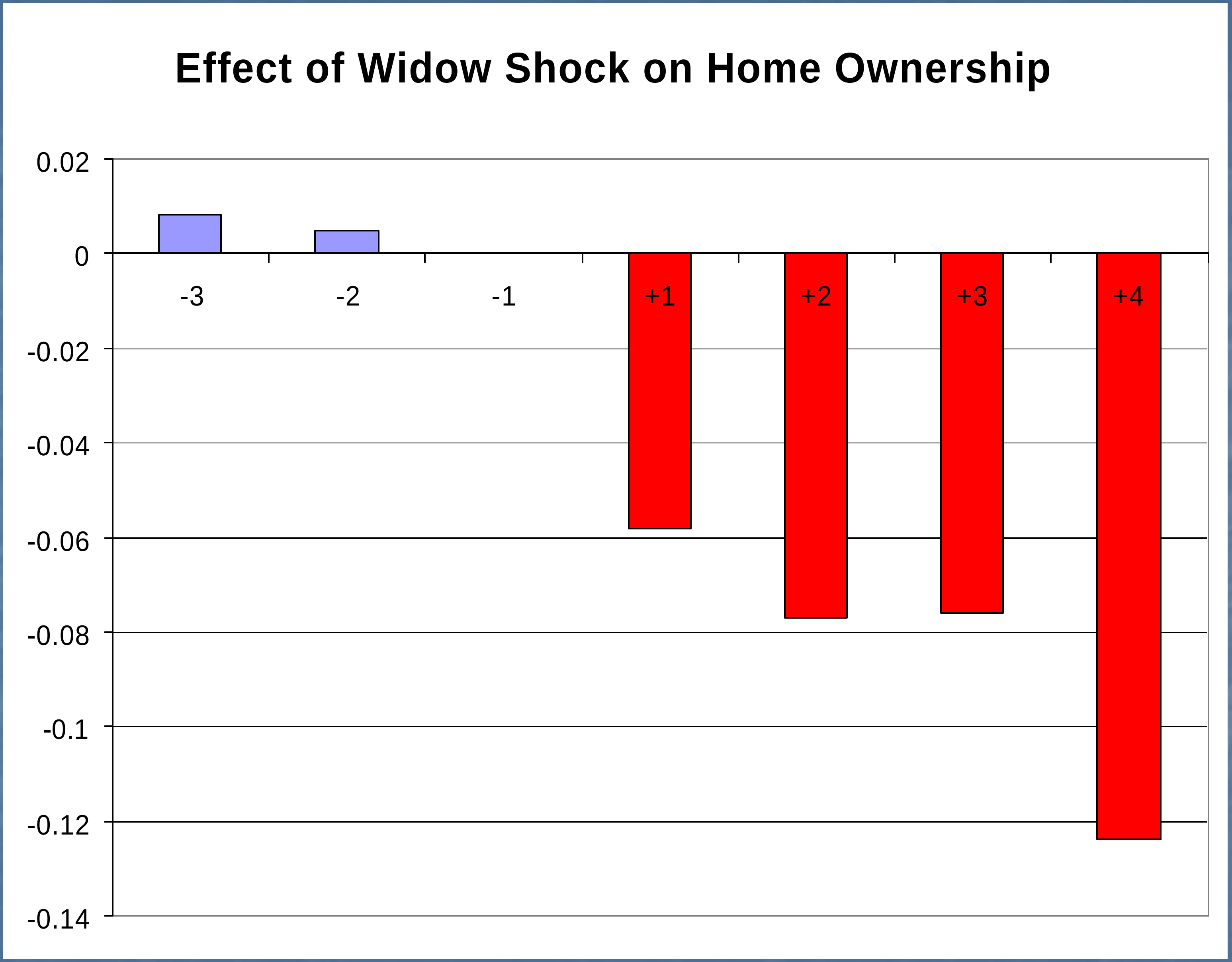
- Explore whether asset holdings are affected by health shocks using the following regression model:

$$Assetholdings_{it} = b_0 + b_1(shock-3)_{it} + b_2(shock-2)_{it}$$
$$+ b_3(shock+1)_{it} + b_4(shock+2)_{it} + b_5(shock+3)_{it} + b_6 X_{it} + e_{it}$$

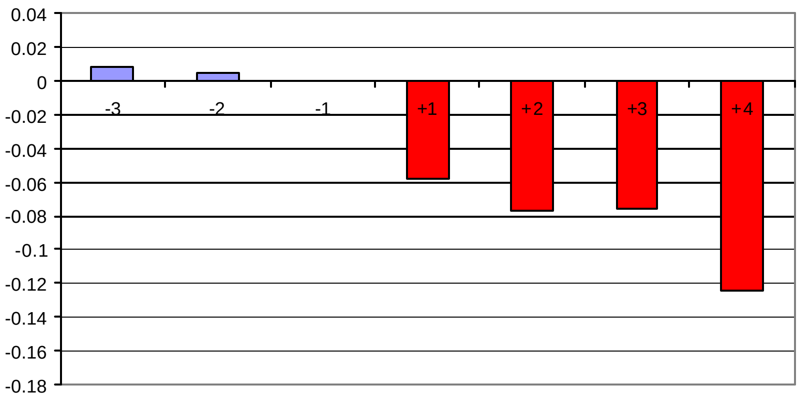
where shock+1 is a dummy variable equal to 1 if this is the first interview after the shock, +2 if it is the 2nd interview after, etc.

- There is no “period 0,” as the shock occurs between interviews.

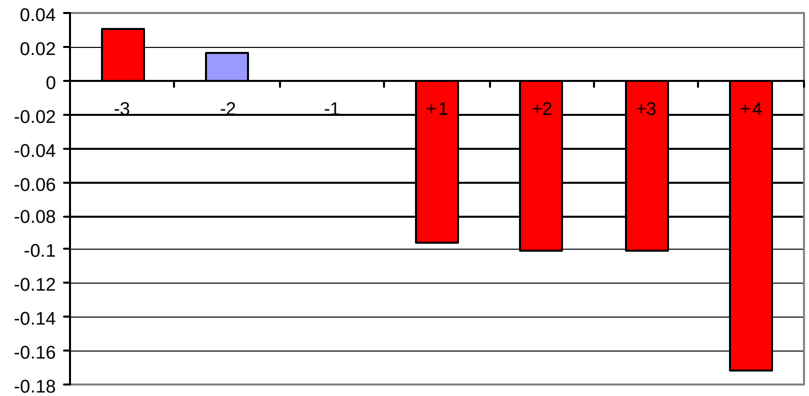
- In the regressions, shock-1 is the omitted group, so shock dummies are interpreted as effects relative to the interview just before the shock.


Effect of Widow Shock on Home Ownership
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
-0.12
-0.14
-3
-2
-1
+1
+2
+3
+4

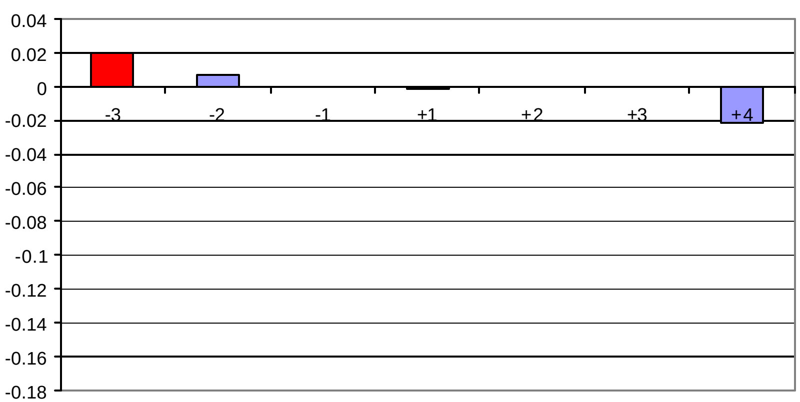
Widow Shock, Home



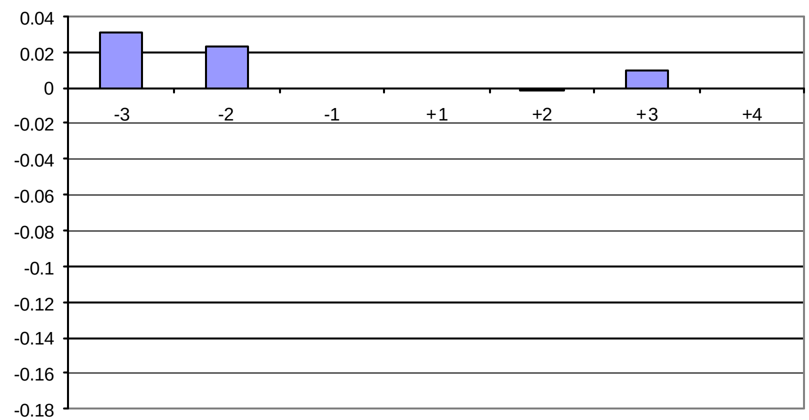
Widow Shock, Vehicles



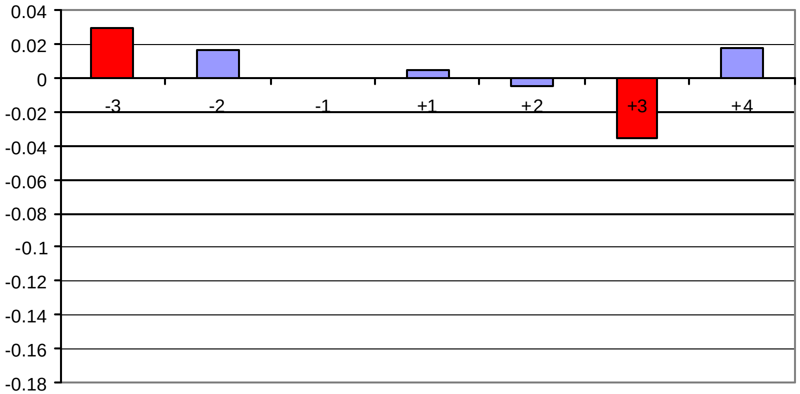
Widow Shock, Business



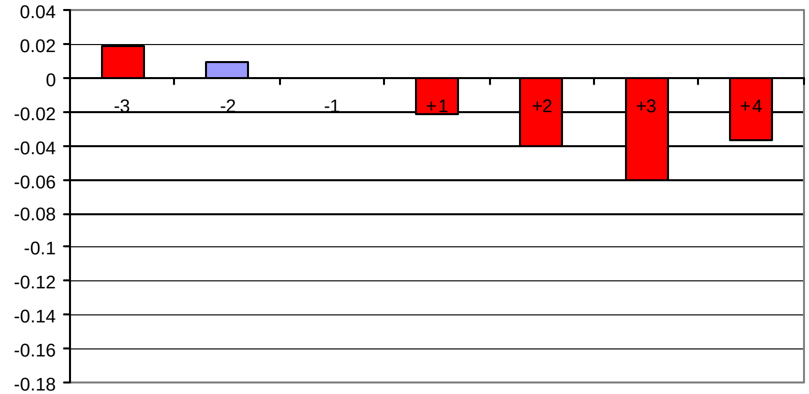
Widow Shock, Stocks



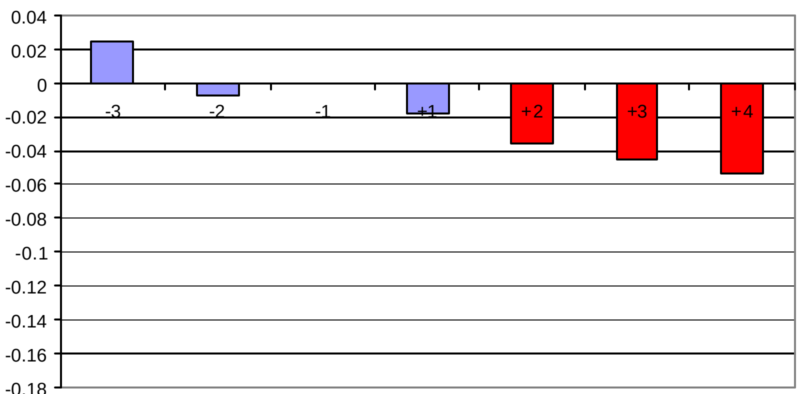
ADL Shock, Home



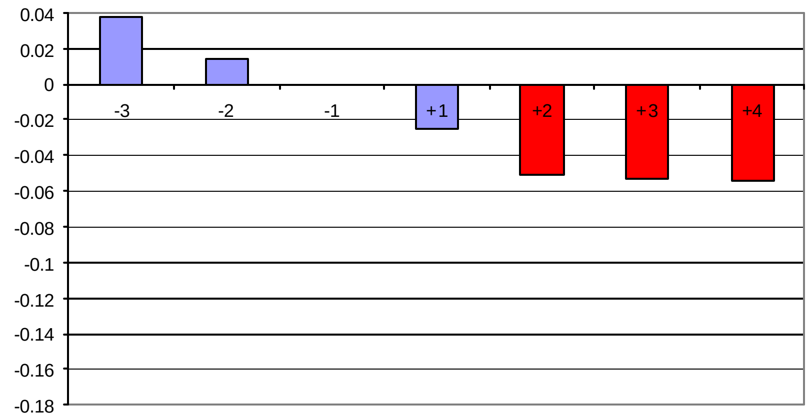
ADL Shock, Vehicles



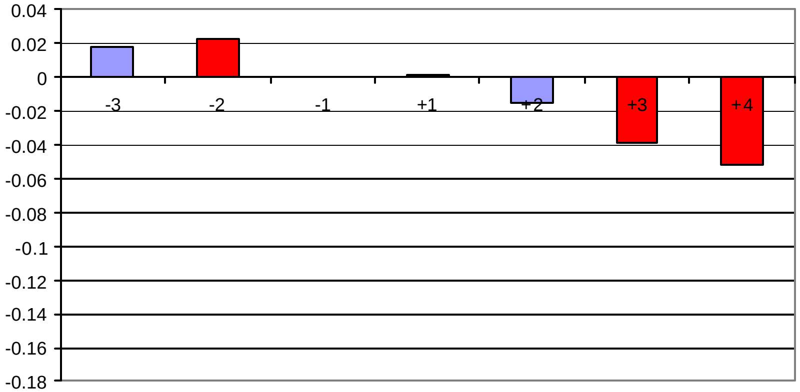
ADL Shock, Business



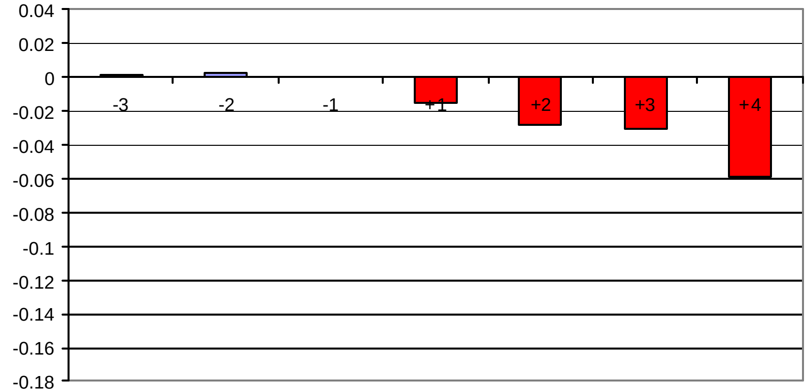
ADL Shock, Stocks



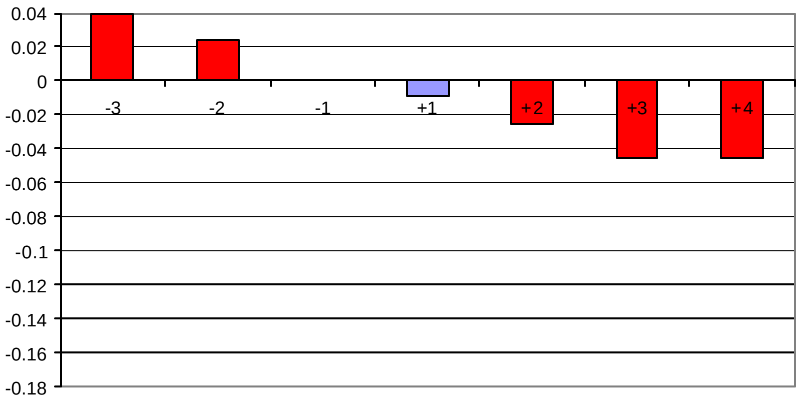
Acute Shock, Home



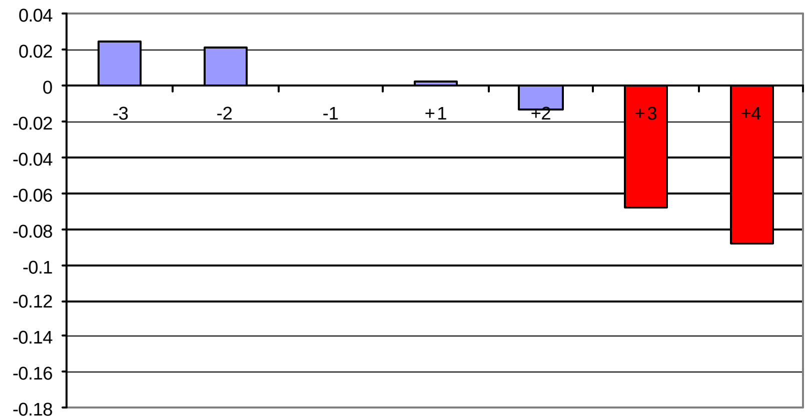
Acute Shock, Vehicles



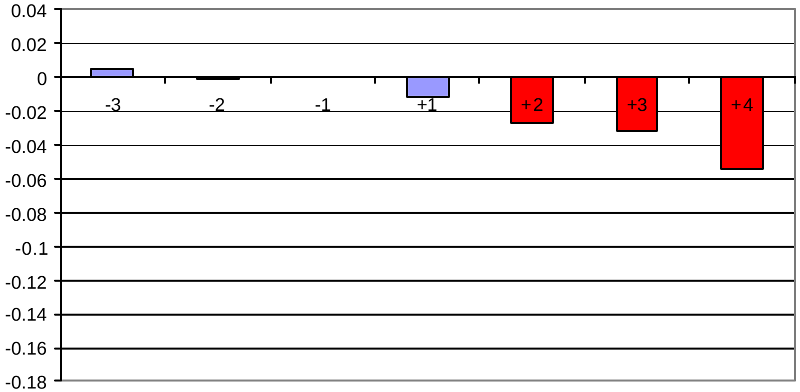
Acute Shock, Business



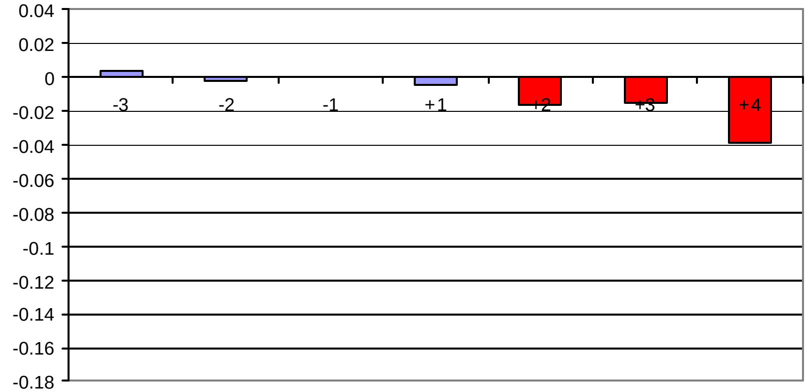
Acute Shock, Stocks



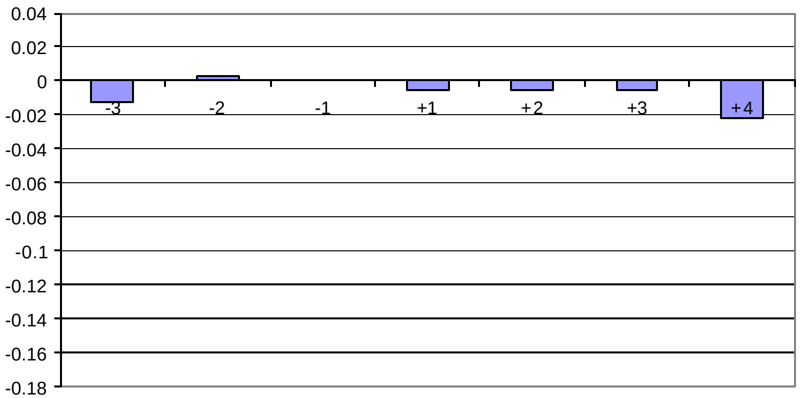
Chronic Shock, Home



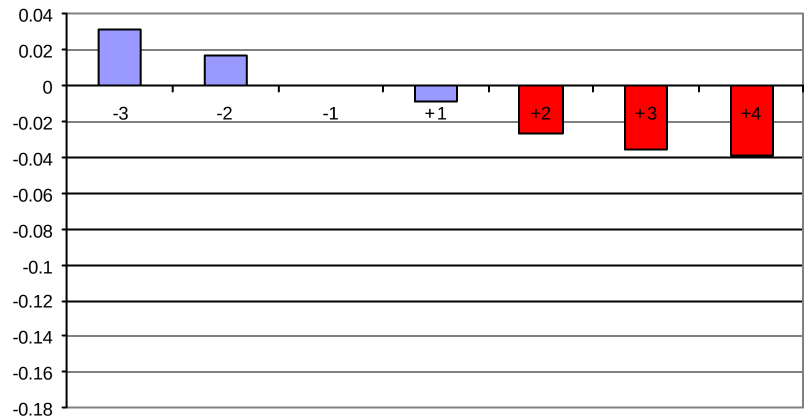
Chronic Shock, Vehicles



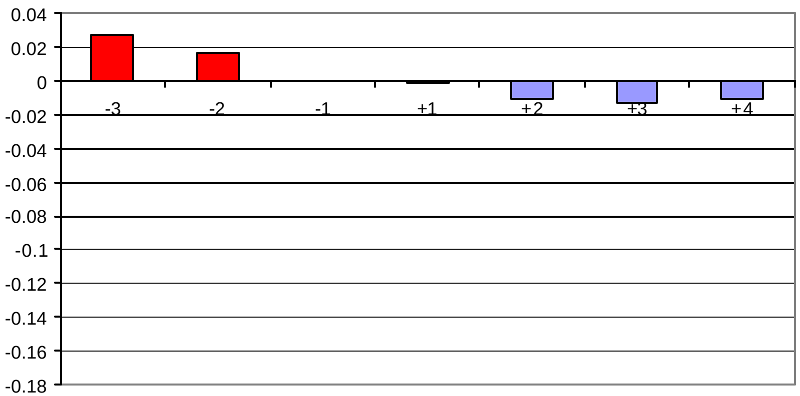
Chronic Shock, Business



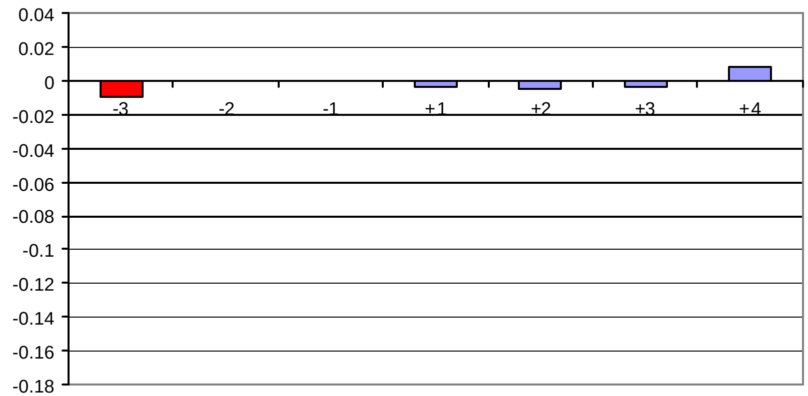
Chronic Shock, Stocks



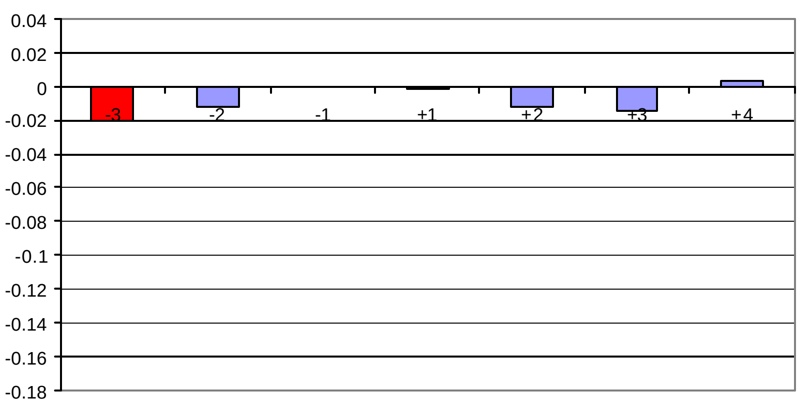
Health Status Shock, Home



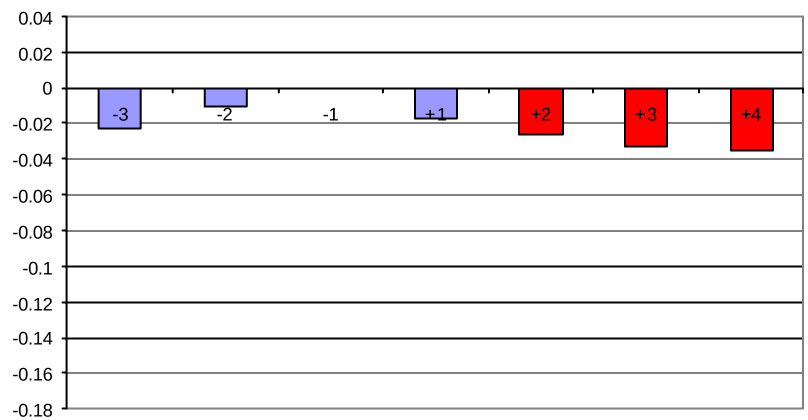
Health Status Shock, Vehicles



Health Status Shock, Business



Health Status Shock, Stocks



Conclusions

- We find a sharp decline in home and vehicle ownership with age, but no consistent results for other asset classes.

- Health shocks are generally associated with a decrease in home, vehicle, business, and stock ownership, though results vary by type of health shock. Changes in self-reported health status have no effect on asset holdings.

- We view this as a first step in the study of health and asset holdings. In future work, we will explore the effect of shocks on the amount and share of wealth in each asset class and examine whether shocks to husbands and wives have the same effect.